

DISCUSSION DRAFT CLAIMS

Kikuchi et al, Serial No. 09/444,819

Attorney Docket: 10417-006001

1. A semiconductor device comprising a source region, a channel region, a drain region, a gate electrode disposed above the channel region, and a two part drift region disposed adjacent to the channel region and extending to and below the drain region,

wherein a first part of said the drift region, having substantially uniform depth, is formed shallowly at least below a substantial part of the gate electrode;

wherein a second part of said drift region, having substantially uniform depth, but is formed more deeply than said first part in a neighborhood of the drain region.

2. A semiconductor device comprising:

a first conductivity type well region formed in a first conductivity type semiconductor substrate;

a gate electrode formed on the substrate via a gate insulating film;

a first conductivity type body region formed to be adjacent to the gate electrode;

a second conductivity type source region and a channel region formed in the first conductivity type body region;

a second conductivity type drain region formed at a position remote from the first conductivity type body region; and

a two part, second conductivity type drift region, with a first part having substantially uniform depth formed shallowly from the channel region to the drain region, at least below a substantial part of the gate electrode, and a second part of said drift region having substantially uniform depth being formed more deeply than said first part in a neighborhood of the drain region.

3. A semiconductor device according to claim 2, wherein the second conductivity type drift region is formed by implanting doped with

at least two kinds of second conductivity type impurities which have different diffusions coefficients, and

at least one kind of first conductivity type impurity which has a diffusion coefficient substantially equal to or larger than the diffusion coefficient of at least one kind of second conductivity type impurity such; and

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~~{such that it is formed by diffusing the second conductivity type impurities into a deep region by using a difference in the diffusion coefficients and is formed shallowly in a neighborhood of the source region by canceling the second conductivity type impurities by the first conductivity type impurity}~~

~~the first conductivity type impurity cancels the second conductivity type impurities in the region below said shallowly formed first part.~~

4. A semiconductor device according to claim 3, wherein the second conductivity type drift region is formed by implanting an arsenic ion and a phosphorus ion as are the second conductivity type impurities ~~into an overall surface of a region serving as the drift region and selectively implanting a boron ion is as the first conductivity type impurity only into a region in a neighborhood of the source region.~~

A. A semiconductor device in accordance with claim __, wherein the dopant concentration of said first part is higher than that of said second part. [?? See page 21, lines 12-18)

B. A semiconductor device in accordance with claim __, wherein the entire first part of said drift region is located below said gate electrode.